CLAIMS

1. A two piece unitary piston being adapter for use with an engine, said two piece unitary piston comprising:

a head member being made of a material having a preestablished material strength, having a crown portion to which is connected a ring band portion defining a bottom surface and having a support portion defining a mating surface having a preestablished surface area;

a skirt member being made of a material having a preestablished material strength being substantially the same as the preestablished material strength of said head member, having a ring band support surface being aligned with the bottom surface and having a top surface being aligned with said mating surface;

said head member and said skirt member being joined forming said two piece unitary piston, said joining being at the interface of said bottom surface and said mating surface, and said ring band support surface and said top surface respectively; and

said joining being formed by an inertia welding process.

2. The two piece unitary piston of claim 1 wherein each of said head member and said skirt member are made of steel.

3. The two piece unitary piston of claim 2 wherein each of said head member and said skirt member are formed as a forging.

4. The two piece unitary piston of claim 2 wherein said head member is formed as a forging and said skirt member is formed as a casting.

5. The two piece unitary piston of claim 2 wherein said head member is formed as a casting and said skirt member is formed as a forging.

6. The two piece unitary piston of claim 1 wherein said interface of said bottom surface and said ring band support surface being radially spaced from said interface of said mating surface and said top surface.

7. The two piece unitary piston of claim 6 wherein said bottom surface and said ring band support surface being axially spaced from said interface of said mating surface and said top surface.

8. The two piece unitary piston of claim 7 wherein said head member defining a combustion side and said interface of said mating surface and said top surface being closer thereto than said interface of said bottom surface and ring band support surface.

9. The two piece unitary piston of claim 1 further comprising a piston cooling gallery.

10. The two piece unitary piston of claim 9 wherein said piston cooling gallery includes a head ring cooling gallery being positioned within said head member and a skirt member cooling gallery being positioned within said skirt member.

11. The two piece unitary piston of claim 9 wherein said piston cooling gallery includes a coolant inlet and a coolant outlet.

12. A method of making a two piece unitary piston, said method of making comprising the steps of:

positioning a head member within a first chuck member;

centering said head member about a central axis;

positioning a skirt member within a second chuck member;

centering said skirt member about said central axis;

rotating at least one of said first chuck member having said head member centered on said axis and said second chuck member having said skirt member centered on said axis; and

moving at least one of said first chuck member and said second chuck member axially toward the other;

interfacing said head member with said skirt member; and

forcing at least one of said head member into heat generating contact with said skirt member.

13. The method of making said two piece unitary piston of claim 12 wherein said step of centering said head member about said central axis includes adjusting a plurality of jaws of said first chuck member.

14. The method of making said two piece unitary piston of claim 12 wherein said step of centering said skirt member about said central axis includes adjusting a plurality of jaws of said second chuck member.

15. The method of making said two piece unitary piston of claim 12 wherein said step of positioning said head member within said first chuck member includes said head member being at least partially premachined.

16. The method of making said two piece unitary piston of claim 12 wherein said step of positioning said skirt member within said first chuck member includes said head member being at least partially premachined.

17. The method of making said two piece unitary piston of claim 12 wherein said step of rotating at least one of said first chuck member having said head member centered on said axis and said second chuck member having said skirt member centered on said axis includes rotating said first chuck member.

18. The method of making said two piece unitary piston of claim 12 wherein said step of rotating at least one of said first chuck member having said head member centered on said axis and said second chuck member having said skirt member centered on said axis includes rotating said second chuck member.

19. The method of making said two piece unitary piston of claim 12 wherein said step of moving at least one of said first chuck member and said second chuck member axially toward the other includes axially moving said first chuck member.

20. The method of making said two piece unitary piston of claim 12 wherein said step of moving at least one of said first chuck member and said second chuck member axially toward the other includes axially moving said second chuck member.